Defense Acquisition University

DOD AT&L Technology Transition Learning Center of Excellence Briefing to SOCOM

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AT&L Technology Transition Learning Center of Excellence

Vision

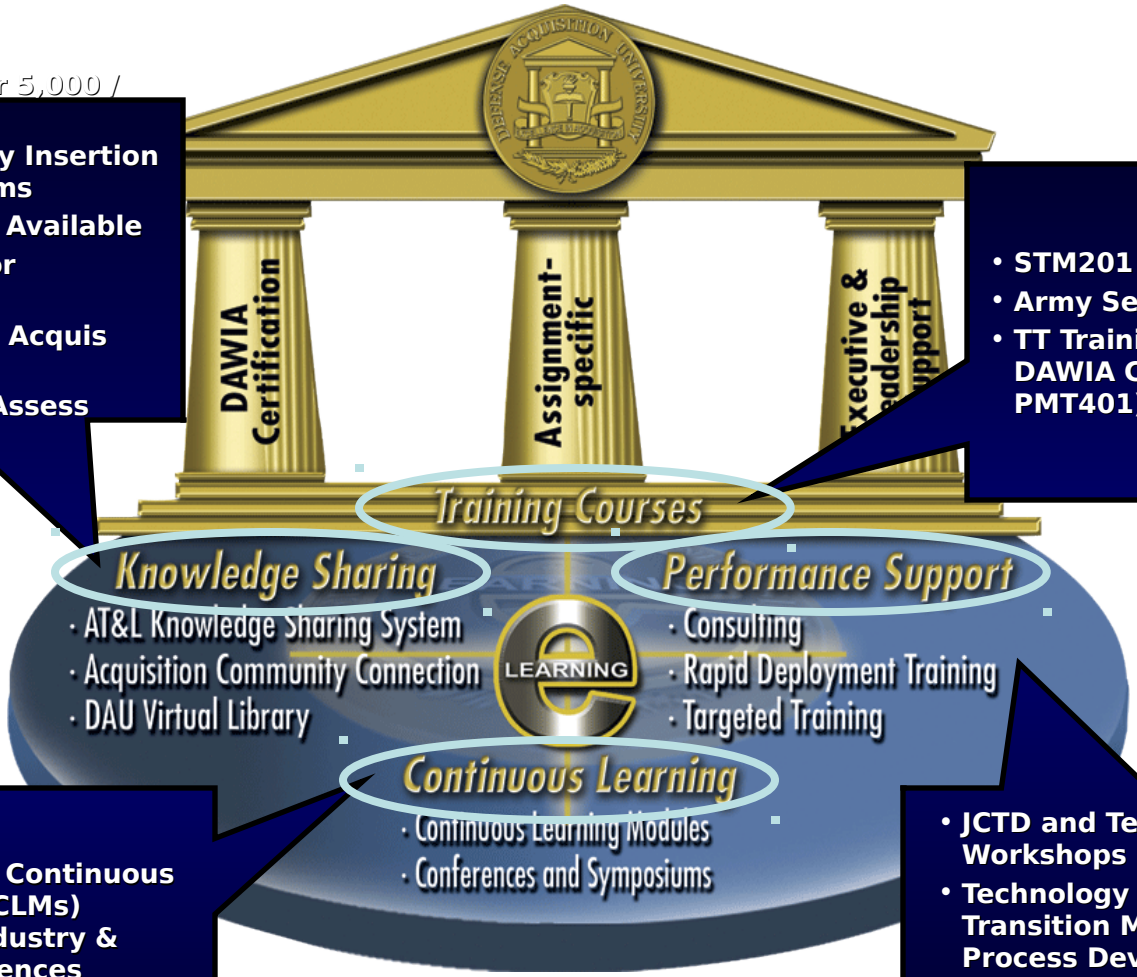
A collaborative effort between government, industry, and academia to provide timely, mission-enhancing technology transition training, assessments, and technical products and services to assist the AT&L Workforce

Technology Transition (TT) Learning Center of Excellence (TTLCOE)

Performance Learning Model (PLM)

- Visits to S&T CoP – over 5,000 / month
- 400+ TT and Technology Insertion Knowledge Sharing Items
- 600+ TT Library Assets Available
- 500+ TT Ask a professor responses
- Mgr Guide to TT in Evol Acquis Environ
- Technology Readiness Assess Guide

- STM201 and STM302
- Army Senior Service College
- TT Training integrated into DAWIA Courses (e.g., PMT352, PMT401)



- Technology-Related Continuous Learning Modules (CLMs)
- TT Refreshers at Industry & Government Conferences
- TT Workshops & Seminars

- JCTD and Tech Transition Workshops
- Technology Assessment & Transition Management (TATM) Process Development
- GATech/Army/DAU Partnership on Technology Planning

Technology Transition Challenges

DUSD(AS&C) Report to Congress – July 2007

Four Broad Areas for Improvement:

- Responsibility, resources, and programs for technology maturation beyond TRL 5 (“technology push”)
- Requirements, resources, and acquisition strategies for timely technology transition beyond TRL 7 (“technology pull”)
- Technical, cultural, and business barriers to integrating new suppliers and new technologies into defense system architectures
- Focused governance and oversight at the Enterprise Level

Established the Technology Transition Task Force (TT ESG)

See Full Report at:
https://acc.dau.mil/CommunityBrowser.aspx?id=21690

Technology Transition Executive Steering Group (TT ESG)

PURPOSE:

This will be a government-only, senior level steering group that will tackle solutions for selected barriers and challenges outlined in the Report to Congress on Technology Transition, and report recommendations to the Technology Transition Council, chaired by USD (AT&L), Mr. John Young.

Members:

- Assistant DUSD (I&TT), Chair – Ms. Kathleen Harger
- One S&T rep from each Service and Agency (DTRA, MDA, DARPA, etc.)
- One Acquisition rep from each Service and Agency
- One rep from Joint Requirements Oversight Council
- One rep from SOCOM -- Dr. Dale Uhler

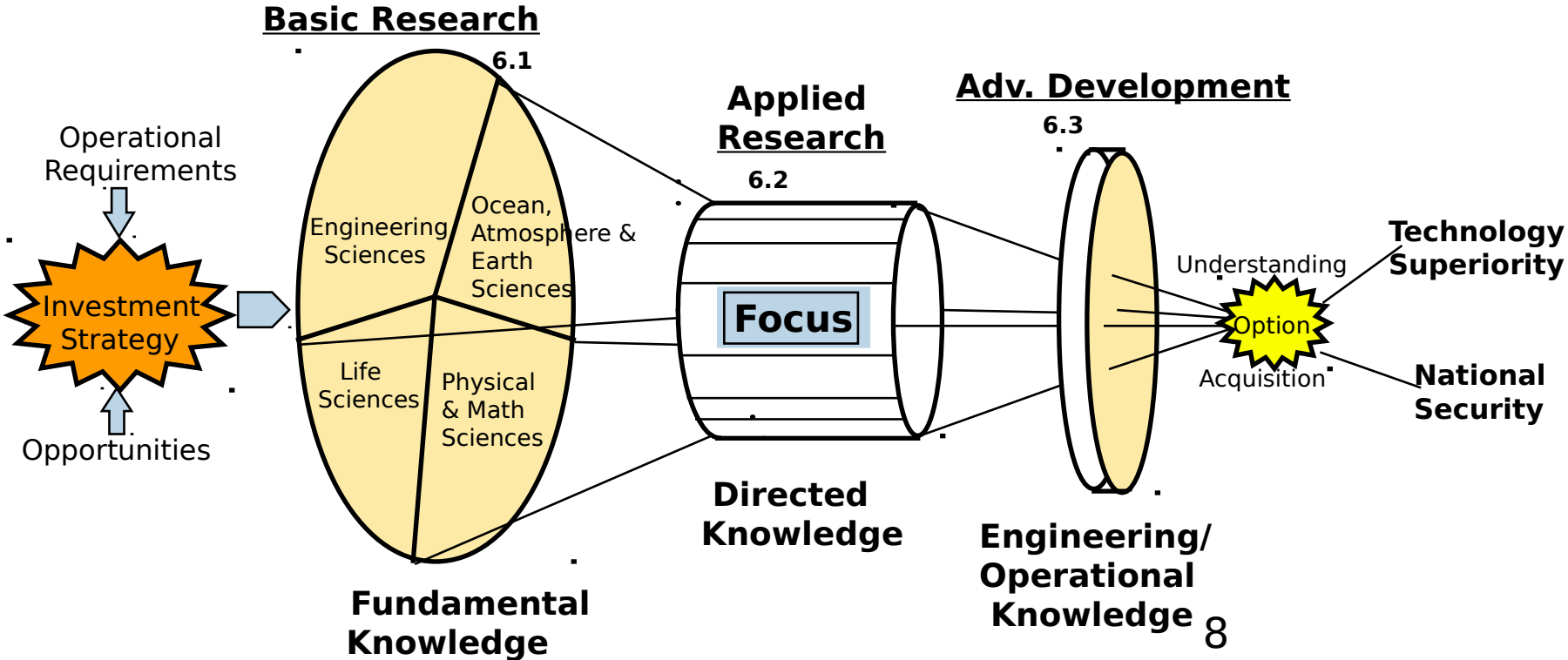
Quantifying the Effects of Immature Technologies

According to a GAO review in 2005 of 54 DoD programs:

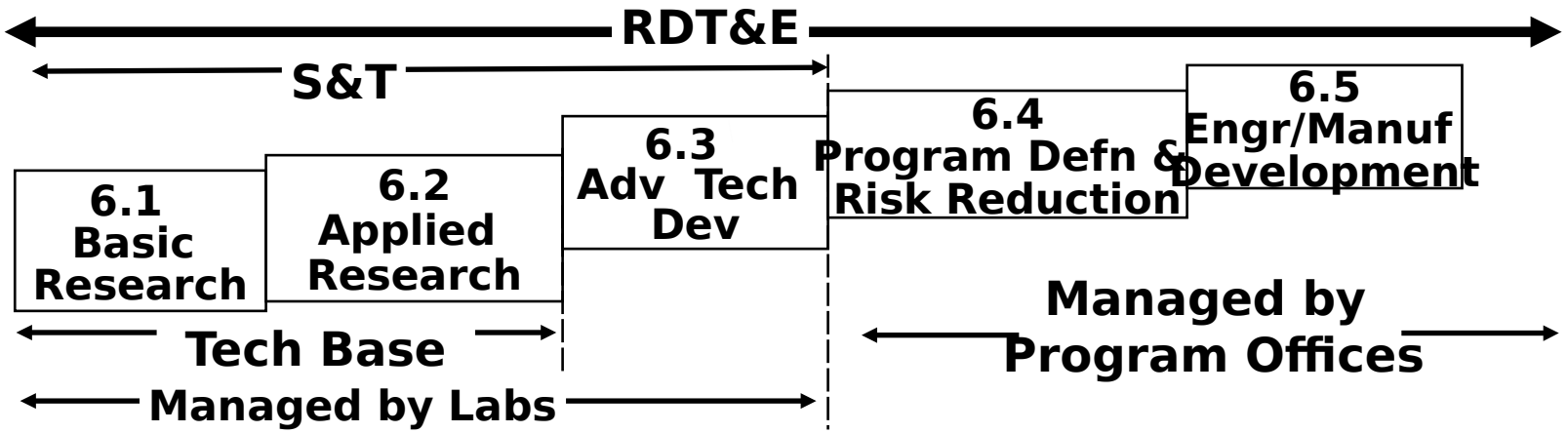
- Only 15% of programs began System Design Decision [post MS B] with mature technology (TRL 7)
  - Programs that ***attempted to integrate with immature technologies*** averaged ***41% cost growth*** and a ***13 month schedule delay***
- At Critical Design Review, 58% of programs demonstrated design instability (< 90% drawings releasable)
  - ***Design stability not achievable with immature technologies***
  - Programs ***without stable designs at CDR*** averaged ***46% cost growth*** and a ***29 month schedule delay***

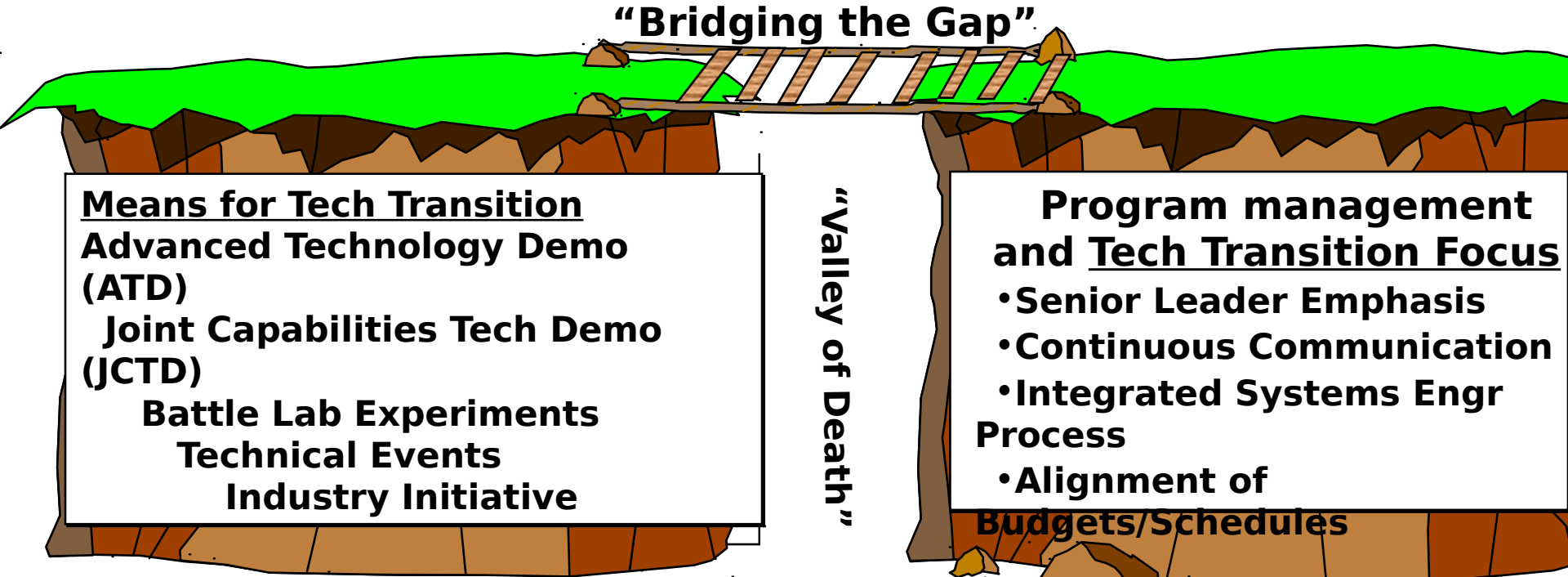
The DOD Lens Analogy

- 6.1 Basic research **is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts**
- 6.2 Applied research **is systematic study to gain knowledge or understanding necessary to determine the means by which a recognized or specific need may be met**
- 6.3 Advanced technology development **includes all efforts that have moved into the development and integration of hardware for field experiments and tests**



The Technology Transition Gap





Means for Tech Transition

- Advanced Technology Demo (ATD)
- Joint Capabilities Tech Demo (JCTD)
- Battle Lab Experiments
- Technical Events
- Industry Initiative

Program management and Tech Transition Focus

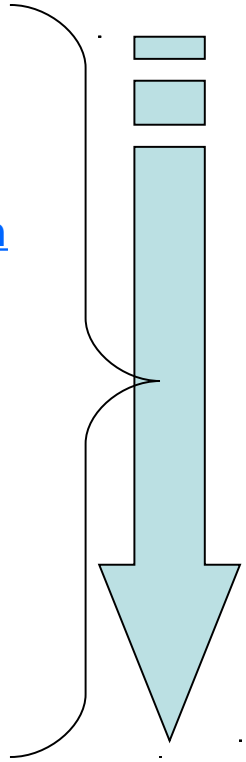
- Senior Leader Emphasis
- Continuous Communication
- Integrated Systems Engr Process
- Alignment of Budgets/Schedules

DUSD(AS&C) Report to Congress – July 2007

"PEO and PMs do not create program or portfolio plans that consciously identify needed technologies and/or their associated technology insertion points. The POM [Program Objective Memorandum] reflects a relatively short horizon, money-constrained program which does not adequately address technology insertion issues. There is no effective outreach mechanism between the user, S&T, acquisition, and logistics communities, hindering development of technology insertion plans."

Technology Transition Challenges

- **Strategic Investment Decisions**
  - Prioritized Investments
  - Focus on Specific Technology Areas
  - Enabling Technologies to Meet Capability Gaps
- **Technology Assessment & Maturation Process**
  - TRL Assessments
  - Moving from one Readiness Level to Another
- **Roadmaps to Align Program and S&T Plans**
  - Funding and Schedule Alignment
  - Acquisition Process and TRL Level Alignment
  - Technology Insertion Points Identified
- **Disciplined Systems Engineering Process to Manage Technology Transition Planning**
  - Documented Plans – Tech Transition Agreements
  - Specific Actions to Mature TRL Level



Cutting Across these Issues:

- Policy
- Organizational Goal Alignment
- Communication between Stakeholders (PM, User, S&T)
- Common Language for Technology Assessment, TRL Definitions, Terms, and Plans for Maturation

There is a Solution!

Technology Assessment and Transition Management (TATM) Process

Technology Assessment and Transition Management (TATM) Process

- **TATM process fosters collaboration, leveraging, and cost sharing among user, acquirer, technology developer, and sustainer communities**
- **TATM helps get technology to war fighter through disciplined systems engineering process**
- **Now being tailored and implemented by several organizations:**
  - **PEO Aviation**
  - **PEO Core Soldier**
  - **Joint Ground Robotics Office ****

OSD Joint Ground Robotics
TATM Process Endorsement

"This DAU Technology Transition Management process has a lot of merit. I adapted it for Joint Ground Robotics use, and it has been very effective for us."

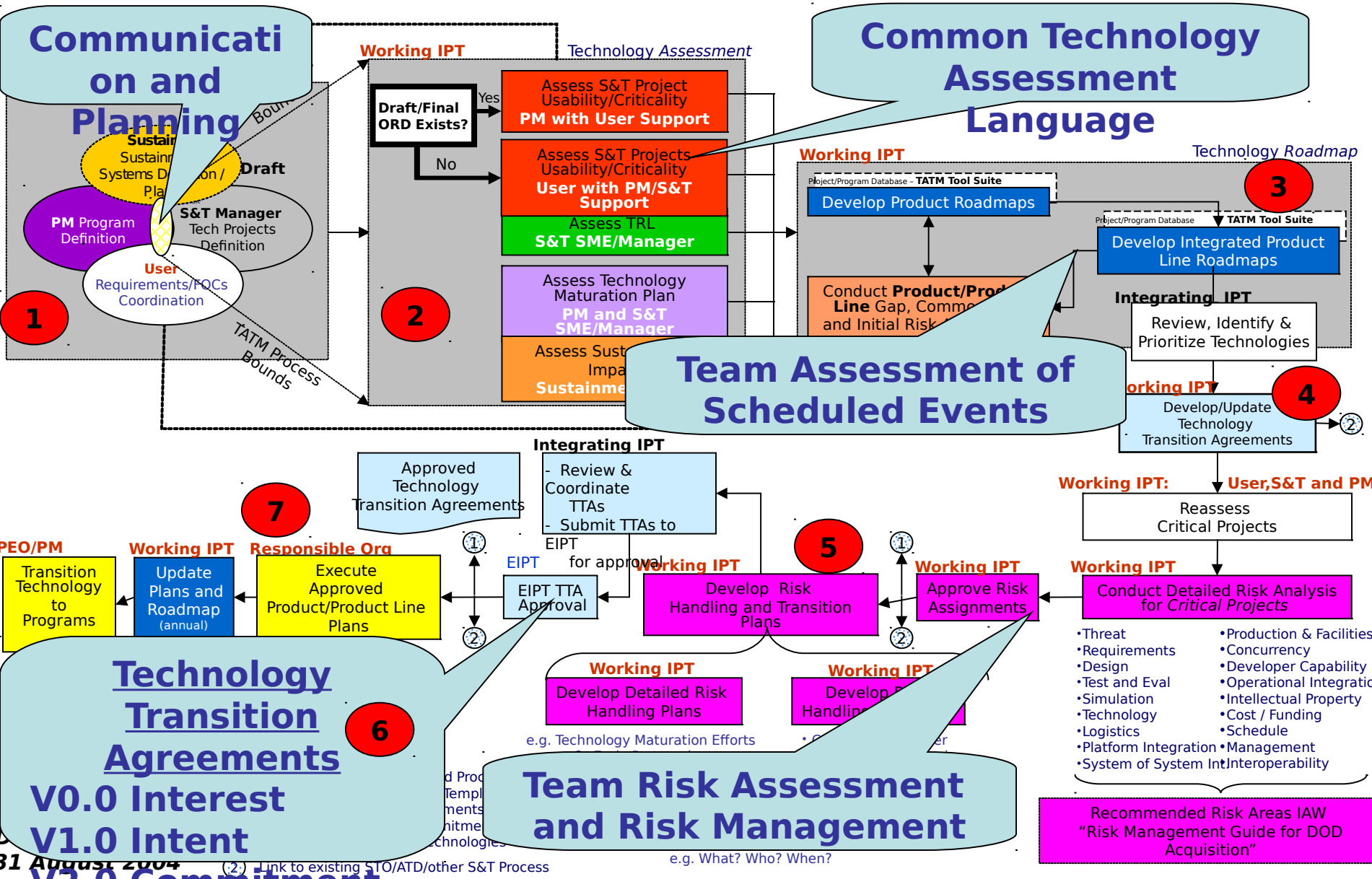
Ellen M. Purdy
Enterprise Director, Joint Ground Robotics,
Land Warfare and Munitions within Portfolio Systems Acquisition, Office of the Under Secretary of Defense for Acquisition, Technology & Logistics
OUSD(ATL)PSA/LW&M

August 22, 2007

TATM Process

1. Identify Programs, Technologies, and User Requirements
2. Technology Assessment of:
   - Criticality to the Mission
   - Technology Readiness Level (TRL)
   - Technology Maturity Plan
   - Sustainment Impacts (Logistics)
3. Technology Roadmap Development
4. Technology Transition Agreement (TTA) Development
5. Risk Assessment & Risk Mitigation Strategy
6. Management approval of TTAs
7. Execute approved program plans, roadmaps, and TTAs

PEO Aviation TATM Process Detail



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Technology Roadmaps

PM Technology Roadmap - Key Product of TATM Process

Programs and Descriptions

Program Schedules By Phase

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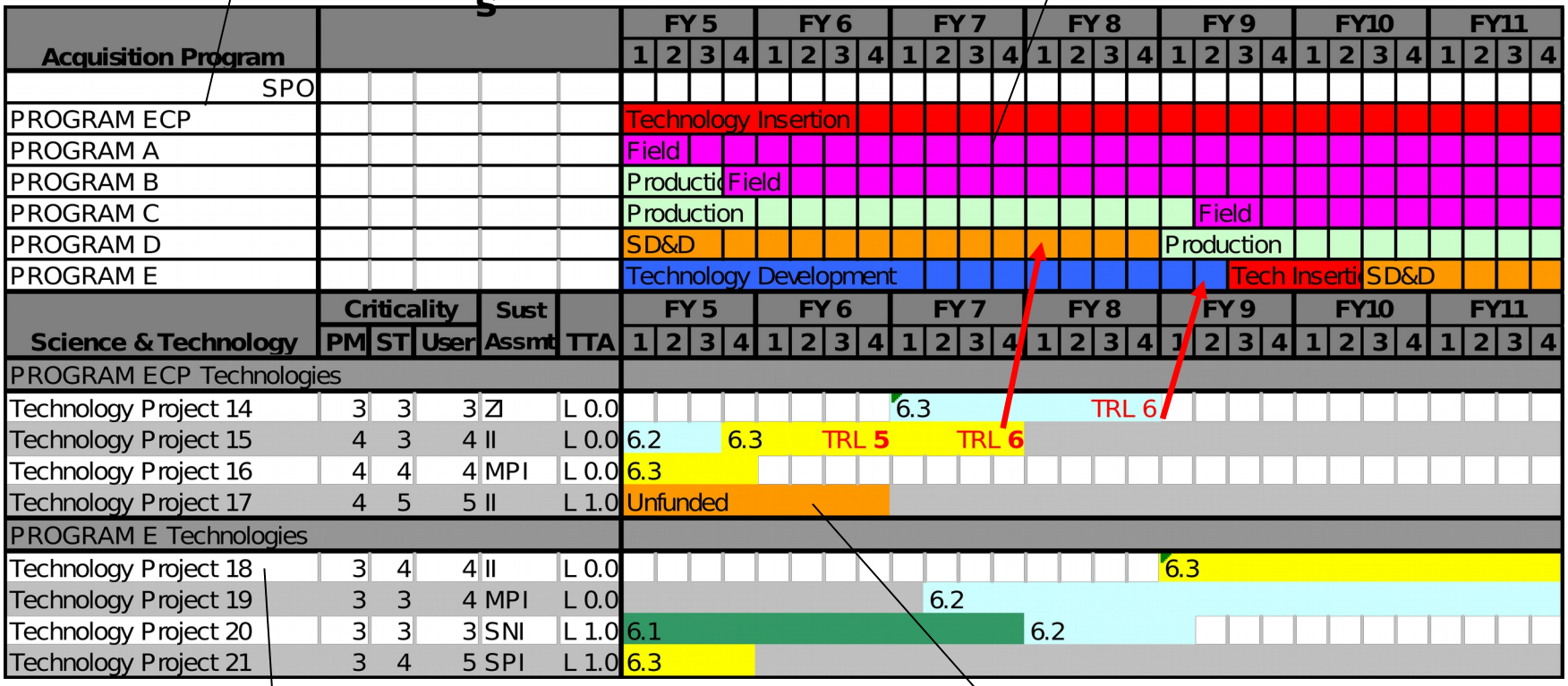

Technology Projects and Description

Technology Funding and projected TRLs

Technology Transition Agreements

Technology Transition Agreements

- Identifies Target Programs and Enabling Technologies
  - Alignment to Capability Gaps
  - Level of Commitment: Interest, Intent, Commitment
- Disciplined Systems Engineering process
  - Technology Maturation Plans
  - Roadmaps to Technology Insertion Points
  - Identify Portfolio Horizontal Technology Integration opportunities
  - S&T Portfolio Management and Prioritization
- Coordination & Communication
  - Roles and Responsibilities
  - User criticality assessments
  - Alignment of plans and design constraints
- Funding & Schedules
  - Who will request funding, & in what years and amounts?
  - Identify the Program Elements and Budget Activities
  - TRL maturity v. acquisition milestones = technology insertion pts
- Documentation and Data Provided

Summary

- Technology Transition Executive Steering Group (TT ESG) will address the issues in the Congressional Report
  - Many issues have been ongoing for years

- Technology Transition Mgt provides a large return on investment by bridging the “Valley of Death”, thus benefiting from DOD’s S&T investments

- TATM is a systems engineering process to:
  - Facilitate Communication among Stakeholders
  - Create Technology Insertion Roadmaps
  - Develop Technology Transition Agreements

DAU recommends that SOCOM adopt a robust Technology Transition Management Approach